

Spacecraft Water Regeneration by Catalytic Wet Air Oxidation, Phase I

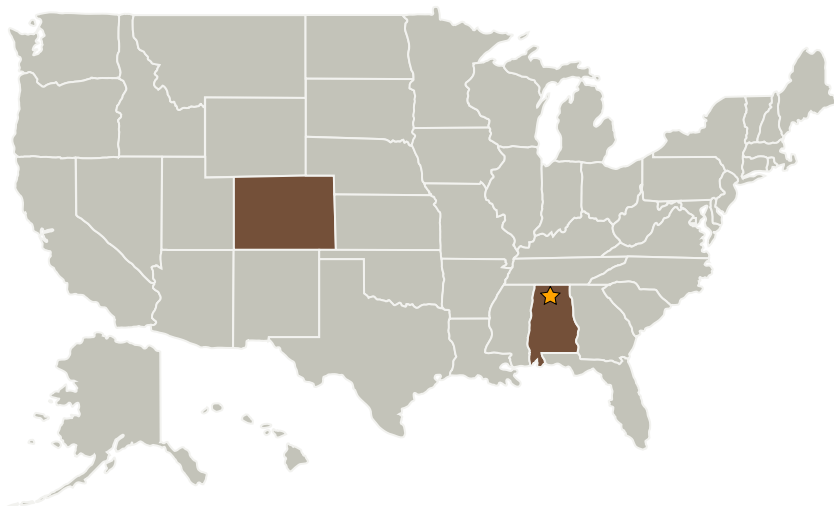
Completed Technology Project (2005 - 2005)



Project Introduction

The objective of this project is to develop advanced catalysts for a volatile removal assembly used to purify spacecraft water. The innovation of the proposed catalysts is improved oxidation activity for organic compounds relative to conventional systems. Additionally, by minimizing or avoiding noble metals in the compositions, catalyst cost is reduced and the materials are less susceptible to fouling. These characteristics will translate into lower weight, volume, and power requirements relative to current systems. Catalysts will be derived from a subset of Eltron-patented materials with demonstrated low-temperature oxidation activity and inherent water resistance. The technical goals will be to minimize the temperature and pressure requirements for operation, and resist catalyst leaching and hydrothermal sintering. These goals will be achieved by performing systematic studies that relate fabrication variables and compositions to catalyst characteristics. Candidate catalysts will be evaluated for destruction of representative organic contaminants, and activity will be determined as a function temperature and pressure. Coarse optimization of catalyst compositions will be performed, and the most promising compositions will be manufactured into grains with optimal dimensions and porosity.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center
(MSFC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

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Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Eltron Research & Development, Inc.	Supporting Organization	Industry	Boulder, Colorado

Primary U.S. Work Locations

Alabama	Colorado
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jesse Taylor

Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.3 Thermal Protection Components and Systems
 - └ TX14.3.1 Thermal Protection Materials